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# FLOODPLAIN MANAGEMENT RECONNAISSANCE STUDY REPORT

## CARRIER MILLS SALINE COUNTY



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VILLAGE OF CARRIER MILLS  
SALINE COUNTY, ILLINOIS  
FLOODPLAIN MANAGEMENT  
RECONNAISSANCE STUDY

Prepared By

U.S. Department of Agriculture  
Soil Conservation Service  
Champaign, Illinois

In cooperation with

STATE OF ILLINOIS  
Department of Transportation  
Division of Water Resources

DECEMBER 1984

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## VILLAGE OF CARRIER MILLS

### RECONNAISSANCE STUDY

#### INTRODUCTION

Use of floodprone areas can be a severe problem in Illinois. Urbanization and floodplain encroachment are increasing the severity of this problem. Over 800 communities in Illinois have been identified as having flooding problems.

The Illinois Division of Water Resources (DWR) is the responsible state agency for urban flood control and for setting priorities of flood studies within urban areas. The Soil Conservation Service is providing assistance to the Division of Water Resources in setting these priorities. A joint coordination agreement was executed between the Division of Water Resources, State of Illinois, and the USDA, Soil Conservation Service on April 30, 1976 and revised in December 1978 to furnish technical assistance in carrying out Flood Hazard Studies. These studies are carried out in accordance with Federal Level Recommendation 3 of "A Unified National Program for Flood Plain Management," and under Section 6 of Public Law 83-566. A plan of study was executed in October 1983 for reconnaissance studies for 15 Illinois communities. These reconnaissance studies will utilize existing floodplain information, historical high water profiles, and the 100 year floodplain from flood insurance studies when available. Average annual damages are estimated for the structures within the floodplain.



This study was conducted and the report provided for the purposes of: 1) To evaluate needs for additional future studies, 2) to estimate average annual damages, 3) to provide an updated estimate of the 100 year floodplain and map, and 4) to provide guidance and recommendations to the community for improved floodplain management.



## STUDY AREA DESCRIPTION

The village of Carrier Mills is located in Saline County, approximately 7 miles southwest of Harrisburg. The population of Carrier Mills is 2,268, according to the 1980 census.

Transportation facilities within the Carrier Mills area consist of the New York Central Railroad and United States Route #45. Illinois State Route 13 is just north of the village and Illinois State Route 146 and 34 are to the east. These routes are accessible by blacktop roads.

Strip mining has taken place in the area for many years. Amax, Peabody, and Sahara Coal Companies are all active in the Carrier Mills area. The coal industry has plans for mining many more acres and are just starting a new site south of the community. The community does work with the coal companies on various problems.

The main drainage problems for the community of Carrier Mills are caused by drainage problems outside the village limits. The main outlet ditch, as well as the other various small feeder ditches, are tree and brush lined with some fallen trees in the channels. Peabody is starting to mine an area where the main ditch is located. Through various small drainage tributaries, the water finally outlets into the South Fork of the Saline River.



There are two small drainage tributaries and drainage from a Peabody Coal Company spoil area that carries most of the runoff water through Carrier Mills. The west drainage ditch has a drainage area of .83 square miles, while the east drainage ditch has a drainage area of .19 square miles. The drainage is in the Ohio River Basin, hydrologic unit #05140204, Saline River subwatershed #030.

In general, the watershed that flows through Carrier Mills starts at the north part of the village limits. Some areas are fairly steep with short and rolling hills. The slopes will range from 2 to 18% in most areas. Woods and timber border the streams throughout most of its length, with the balance being mined areas or pasture and cultivated fields. The cultivated fields will most generally have a rotation of corn, soybeans, wheat, and soybeans after wheat as a double crop. Some hay and pasture areas still remain in the area. The average annual precipitation is approximately 42 inches with about 12 inches of snowfall. The rainfall is fairly evenly spaced throughout the year, with March, April, and May averaging slightly more than the other months.

Since most of the drainage area is urban in nature, some new development can be expected. Because of the mining interest, development towards the outlet ditch will be nil.







Common soils in the watershed include Bonnie, Raccoon, Stoy, Hosmer, Belknap, and Hoyleton, all of which have a silt loam surface texture. They will range in slope from 2 to 18% for most of the area. A large area of Bonnie silt loam exists south of the village and is actually a large floodplain. Because of its wetness problem, it is not in the prime farmland category. All of these soils tend to be wet with no additional water holding capacity in the spring. This information is from the Soil Survey of Saline County, which was published in June of 1978.

### NATURAL VALUES

The village of Carrier Mills is located in an area of the state that is characterized by an interspersion of land uses. The Shawnee National Forest is located just to the south of the village. Rend lake is a few miles to the northwest, with many smaller lakes and other bodies of water very close. Crop fields are generally small in size on the sloping land and moderate in size on the bottomlands. Scattered pastures, wooded pastures, ungrazed woods, and strip mined areas are located throughout the area. Several thousand ducks and geese spend the winter months in the area near Rend Lake.

The interspersed land use and associated types of plant communities result in a variety of habitats which support a wide range of plant and animal species. The wide variety of plant and animal species present generally make the area a pleasant place for people to live, work, and play.



## FLOOD PROBLEMS

Flooding within the village of Carrier Mills is generally the result of local, heavy rainfalls and could occur during any part of the year. Due to the usually small amount of snowfall in this area, snowmelt is generally not a contributing factor to flooding and ponding. Since most of the flooding is due to heavy local rainfalls over relatively small watersheds, flooding is generally of short durations.

Because of the lack of an adequate outlet for the surface water draining through Carrier Mills, internal drainage problems and shallow water depressional areas cause most of the damages that exist. Problems start with a 3 or 4 inch rain. Only two streets have storm sewers and the remainder of the village relies on small ditches or road ditches to convey the surface water to an adequate outlet.

The Peabody mine spoil west of the village, was leveled and this water was diverted into the village. They have attempted to construct a ditch to take this water to the west, away from the village, but this still needs some work.



Almost the entire village is connected to a sanitary sewer system and new sewage lagoons. The old lagoon has been abandoned. The village has also worked very hard to eliminate the down spouts and basement drain hook-ups from the system. Only 2 homes are not connected at this time to the sanitary sewer system. At present, the Environmental Protection Agency is working with the village to get them to connect to this system, and away from the old practice of connecting into abandoned strip mine areas. The deadline for this has been set and existing problems will be corrected.

There are a considerable number of wet basements located throughout the village. Approximatey 20 to 35% of the older homes have basements, of which most of these have drainage problems. Sump pumps are a necessity for these homes to maintain a relatively dry basement.

The main outlet for surface water is south of the village limits. This water flows through 4 foot and 6 foot culverts laid side by side at the old lagoon site. It then flows through a 5 foot diameter culvert at the new lagoon entrance. In order for the 6 foot culvert to have full flow, it would over top the existing gravel road to the west. Although this system of culverts is not adequate, the drainage problems would probably still remain if the system was corrected because of the condition of the existing ditches. These outlet channels have very little gradient, are heavily tree lined, grown up with brush, and trees have fallen into the channel itself. This is true for a large part of the ditch systems that serve as outlets for the village.





## PROBLEM SUMMARY

Estimated average annual damages from floodwaters and ponding to the properties in Carrier Mills are as follows:

<u>Number Homes</u>	<u>Number Garages &amp; Sheds</u>	<u>Number Businesses</u>	<u>Total Value</u>	<u>Average Annual Damages</u>
10	28	1	\$491,000	\$3,000

Additional damages caused by wet and ponding conditions are as follows:

Approximately 30 additional wet basements	\$ 3,000
Street maintenance	10,000
Sanitary sewer repairs and maintenance	4,000
Yard damages	6,000
TOTAL ADDITIONAL EXPENSE	<u>\$23,000</u>

Total estimated average annual damages for the village of Carrier Mills equals \$26,000. It is estimated that the flooding and ponding starts at the 5-year frequency storm.

## EXISTING FLOODPLAIN MANAGEMENT

Carrier Mills has participated in the Emergency Phase of the National Flood Insurance Program since October of 1977. Emergency flood insurance is available to business and homeowners. FEMA recommends that the Village of Carrier Mills be converted to the regular phase of the Flood Insurance Program.





The village does require and regulate building permits. Only one mobile home has located in the floodplain since the regulations went into effect. However, there will be little or no damage to the trailer since it is high enough off the ground to prevent most damages.

The village has some new home construction but these are in areas that will not be affected by the 100 year flood plain. Future expansion of the village will remain in areas not floodprone, but this is expected to be at a very slow rate.



## RECOMMENDATIONS

The village should continue to participate in the National Flood Insurance Program.

In areas where the ground water table is high, the village needs to regulate or restrict construction of homes where crawl spaces, one half or full basements would be a problem. This would apply to home improvements, replacement homes, and homes in the newer sub-divisions.

Waste water from sump pumps should not be outletted into the sanitary sewer system, as it will increase the treatment costs and possibly overload the system. These should be outletted into areas where proper disposal can be obtained without getting into depressional areas.

The village should continue to work with the coal companies to improve their outlet drainage system in any way that is possible. This is especially true of the area south of the village where new mining is just beginning. The main outlet system is located in this area.

Both culverts that were used to gain entrance to the old sanitary sewer treatment lagoon, should be removed as this entrance is no longer needed.



All debris should be removed from the channels of the existing outlet ditches. Since the channels have little or no grade, debris must be kept out of the channels. This should be an on-going program for the village, and not one that is only addressed after the ditches are blocked with debris.

A large floodplain to the south of the village now exists. It has been discussed that this area will someday be strip mined as many other areas have in the past. If this does happen, problems for the village will probably increase as this area is now somewhat of a temporary holding basin for the runoff surface water. The village should work with the coal company that will do the mining to ensure the drainage problem will not be increased by back up water that cannot get away because of the "decreased holding pond area."

A low priority should be assigned for future floodplain management studies in Carrier Mills.



## INVESTIGATION AND ANALYSIS

No additional calculations, discharges, or profiles were made as a part of this study. The inventory of flooding and water ponding problems is based on field review and interviews with local citizens.

The 100-year floodplain, with ponded areas, was made with the use of the existing flood hazard boundary map, and interviews with local citizens. Aerial photographs were provided by DWR. Damages were based on property value estimates during field review, and the application of damage factors. These factors came from previous detailed floodplain management studies.

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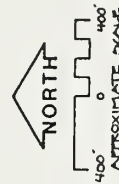
VICINITY MAP  
CARRIER MILLS  
SALINE CO., IL.  
SCALE - 1" = 12 MILES





# LEGEND

- Corporate Limits
- 100 Year Floodplain
- Ponding



## CARRIER MILLS SALINE COUNTY, ILLINOIS

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

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